# Extremely low-loss single-mode photonic crystal fiber in the terahertz regime - DTU Orbit (09/11/2017)

**Extremely low-loss single-mode photonic crystal fiber in the terahertz regime**

This paper presents an updated design and numerical characterization of a rotated porous-core hexagonal photonic crystal fiber (PCF) for single-mode terahertz (THz) wave guidance. The simulation results are found using an efficient finite element method (FEM) which show a better and ultra-low effective absorption loss of 0.045 cm-1 at 1 THz and a more flattened dispersion of 0.74±0.07ps/THz/cm in a wider bandwidth (0.54-1.36 THz) than the previously reported results. Besides, the single-mode region has been extended up to 1.74 THz (previously up to 1.3 THz) which is advantageous for wideband THz applications.

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